Does industrialization affect segregation? Evidence from nineteenth-century Cairo

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ABSTRACT

We investigate the impact of state industrialization on residential segregation between Muslims and non-Muslims in nineteenth-century Cairo using individual-level census samples from 1848 and 1868. We measure local segregation by a simple inter-group isolation index, where Muslims’ (non-Muslims’) isolation is measured by the share of Muslim (non-Muslim) households in the local environment of each location. We find that relative to locations that did not witness changes in the instance of industrialization, the opening of Cairo railway station in 1856 differentially increased Muslims’ isolation from non-Muslims (conversely, decreased non-Muslims’ isolation) in its proximity and that the closures of textiles firms in 1848-1868 differentially decreased it. The results are arguably driven by an “indirect” labor market mechanism, whereby state industrialized firms crowded in private-sector unskilled jobs that attracted greater net inflows of rural immigrants and unskilled workers who were predominantly Muslims.

“Over the past thirty years Europe’s influence has transformed Cairo. Now we are civilized,” Ismail, Khedive of Egypt (1863–79) (Raymond, 1993, p. 309).

1. Introduction

Many cities, such as Chicago, Baghdad, Beirut, Belfast, and Jerusalem, are segregated by ethnicity or religion. It has been documented that residential segregation has adverse effects on socioeconomic and political development, including socioeconomic outcomes of minorities (Collins and Margo, 2000; Cutler and Glaeser, 1997), provision of public goods (Trounstine, 2016), social capital (Uslaner, 2012), and inter-group conflicts (Corvalan and Vargas, 2015; Field et al., 2008). Perhaps motivated by the effects of segregation, scholars have long investigated its underlying causes, especially when segregation is not dictated by law but is rather an outcome of people’s residential choices (Card et al., 2008; Schelling, 1971). Among the causes that can alter people’s residential choices, and hence residential segregation, demand-side shocks to the labor market have received special attention. For example, the “spatial mismatch hypothesis” emphasized how the relocation of firms to the suburbs of US cities was associated with increased segregation between whites, who moved to the suburbs, and blacks, who were left behind in the city center (Kain, 1968).

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An older but related question that dates back to, at least, Engels (1845) and the Chicago School of Sociology (Park and Burgess, 1925; Wirth, 1928), is whether segregation increases with the onset of industrialization. The first Industrial Revolution (IR), a technological shift that increased output per worker in the secondary sector, caused a labor demand shock that triggered population movements both from outside and within cities. As these movements varied by ethno-religious group, due to inter-group occupational differences, they impacted residential segregation in industrialized cities. Engels (1845) vividly described the working-class slums, often predominantly Irish, that emerged with industrialization in English cities where “hundreds and thousands of alleys and courts lined with houses too bad for anyone to live in.” Later scholarship revealed that several English and US cities were ethnically segregated during the first IR, although the evidence is far from conclusive (U.S.: Pratt, 1911; Hershberg et al., 1979; Greenberg, 1981; Zunn, 1982) (Britain: Ward, 1975, 1980).1 But understanding the impact of industrialization on segregation is not only a matter of historical concern about the first IR. The rapid industrialization in recent histories of many developing countries often created ethno-religious enclaves of poor rural immigrants who were cramped in marginalized slums in large cities. For example, segregation by caste and/or religion is quite prevalent in Indian cities and increased with industrialization (Mehta, 1969; Vithayathil and Singh, 2012). The same phenomenon was documented in Sub-Saharan Africa, the Middle East, Asia, and Latin America (see Massey, 2016, for a recent review).

This article revisits the question using evidence from an early program of state industrialization in nineteenth-century Egypt. Following a long medieval tradition, native non-Muslim minorities who constituted 7% of the population of nineteenth-century Cairo, Egypt’s capital and largest city, were clustered in certain neighborhoods in the city.2 Inspired by the first IR, Muhammad Ali, Egypt’s autonomous Ottoman viceroy in 1805–1848, and his successors, embarked on an ambitious state industrialization program that employed 8% of Cairo’s population in 1848 and 3% in 1868.3 Between 1816 and 1848, the program focused on creating state manufacturing firms (mostly, textiles, military, paper and printing industries). However, as many of Ali’s firms (especially, textiles) closed down after 1848, Ali’s successors in 1848–1879 switched their efforts in the program’s second wave to transportation and communications firms (railways, steam navigation, and telegraph) (Saleh, 2015). Although the program did not generate a permanent shift of the labor force from the primary to the secondary sector, nor Modern Economic Growth (MEG) (i.e. sustainable growth in GDP per capita), it shared a certain feature with the first IR in that it created a technical shift within the secondary sector. Compared to Egypt’s private firms in this sector, state industrialized firms were (a) larger, (b) with greater division of labor, and (c) more mechanized (attempted to imitate first-IR technologies of production). These common features, we argue, justify characterizing Egypt’s program as “industrialization,” especially in light of the recent revisionist literature on the first IR (see the historical background section).

The objective of this article is hence to examine whether Egypt’s state industrialization affected residential segregation between Muslims and non-Muslims in Cairo at both the city level and across neighborhoods within the city. There are a few distinguishing features of the Egyptian context that arguably make it suitable to address this question. (1) Egypt’s industrialization was a well-identified state decision, making it possible to observe the universe of industrialized firms (private firms did not industrialize) and thus (potentially) identify their impact on segregation. By contrast, industrialization during the first IR was a choice made by individual firms that is both more difficult to observe, and to identify its effects. (2) Unlike public policies that target residential segregation, the objective of Egypt’s program was to maximize state revenues, and so its effects on segregation, if any, were unintended. This makes our case study more suitable to examine the spontaneous evolution of segregation in response to industrialization. (3) The segregation literature mostly relies on aggregate-level geographic information (e.g. US census tract) that only allows measuring segregation at an even more aggregated level (e.g. the city level). But with these measures, it is not possible to examine the local effects of industrialization. To the contrary, our study is perhaps the first to use individual-level geo-referenced data to examine the local impact of industrialization. (4) Medieval observers long documented that Middle Eastern cities, including Cairo, were segregated along religious lines, and inter-religious urban conflicts are a recurring phenomenon until today. Hence, Cairo is perhaps a suitable context to study religious segregation and how it may have been altered (unintentionally) by industrialization experiments. In this respect, our study is the first to examine local segregation in a nineteenth-century city outside North America and Western Europe. (5) Egypt witnessed a large urbanization wave, especially before 1848.4 Hence, the context is to an extent relevant to the recent experiences of developing countries.

In order to examine this question, we employ a novel data source, individual-level population census samples from 1848 and 1868 that were recently digitized from the original manuscripts at the National Archives of Egypt (Saleh, 2013). These are two of the earliest censuses from any non-Western country to include information on every household member including females, children, and slaves. More important for the purpose of this article, the census samples include the street address of each household, which allows us to geocode the samples at the street level. The censuses also report religion, occupation, and if an individual works in a state firm, among other demographic information. We then merge the samples, aggregated to the household level, with a dataset on locations of

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1 Dennis (1986) estimates residential dissimilarity index between Irish and non-Irish populations in nineteenth-century England at 48–50% in Cardiff (1851), 50–55% in Liverpool (1871), and 56–78% in Hull (1851). Warner (1968) estimates dissimilarity between blacks and non-blacks in 1860 Philadelphia at 47%. These values are generally considered “moderate” segregation (Cutler et al., 1999).

2 There was residential segregation within non-Muslims, across Coptic Christians, non-Coptic Christians (Armenians, Levantines, Greeks), and Rabbinic and Karaite Jews.

3 This is the percentage out of Cairo’s employed male population that is at least 15 years old based on the authors’ calculations from the 1848 and 1868 population census samples. See the data section for details.

4 About 36 and 71% of Cairo’s and Alexandria’s populations respectively in 1848 were born outside the city, although the percentages dropped down in 1868 to 16 and 34%.
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